

CLAIMS

[1] A lubricant composition for hot forming comprising: a solid lubricant from 10 to 40% by mass; a water-dispersible synthetic resin from 5 to 20% by mass; an inorganic acid amine salt from 0.5 to 5% by mass; and water from 45 to 80% by mass, for 100% by mass of the total mass of the lubricant composition,

wherein said water-dispersible synthetic resin is a vinyl acetate polymer obtained by emulsion polymerization using protective colloid selected from a group consisting of hydroxyethyl cellulose, sodium salt of carboxymethyl cellulose, and ammonium salt of carboxymethyl cellulose, or a vinyl acetate polymer obtained by emulsion polymerization using co-polymeric surfactant.

[2] A lubricant composition for hot forming comprising: solid lubricant from 15 to 30% by mass; water-dispersible synthetic resin from 5 to 15% by mass; inorganic acid amine salt from 0.5 to 3% by mass; and water from 47 to 77% by mass, for 100% by mass of the total mass of the lubricant composition,

wherein said water-dispersible synthetic resin is a vinyl acetate polymer obtained by emulsion polymerization using protective colloid selected from a group consisting of hydroxyethyl cellulose, sodium salt

of carboxymethyl cellulose, and ammonium salt of carboxymethyl cellulose, or a vinyl acetate polymer obtained by emulsion polymerization using co-polymeric surfactant.

[3] A lubricant composition for hot forming comprising: solid lubricant from 10 to 40% by mass; water-dispersible synthetic resin from 5 to 20% by mass; inorganic acid amine salt from 0.5 to 5% by mass; and water from 45 to 80% by mass, for 100% by mass of the total mass of the lubricant composition,

wherein said water-dispersible synthetic resin is a resin obtained by polymerization with the following a first to a fourth ingredients,

a first ingredient: main monomer from 85 to 99.7% by mass,

a second ingredient: monomer having functioning group from 0.1 to 7% by mass,

a third ingredient: cross-linking monomer from 0 to 5% by mass,

a fourth ingredient: co-polymeric surfactant from 2.1 to 7% by mass, for 100% by mass of the total mass of said first to fourth ingredients,

said main monomer is two or more monomers selected from methacrylic ester or acrylic ester, and

solubility in the water to said main monomer is 1% or less.

[4] A lubricant composition for hot forming comprising: solid lubricant from 10 to 40% by mass; water-dispersible synthetic resin from 5 to 20% by mass; inorganic acid amine salt from 0.5 to 5% by mass; and water from 45 to 80% by mass, for 100% by mass of the total mass of the lubricant composition,

wherein said water-dispersible synthetic resin is a resin obtained by polymerization with the following a first to a fourth ingredient,

a first ingredient: main monomer from 88 to 97.4% by mass,
a second ingredient: monomer having functioning group from 0.2 to 5.5% by mass,

a third ingredient: cross-linking monomer from 0 to 3% by mass,

a fourth ingredient: co-polymeric surfactant from 2.4 to 4.8% by mass, for 100% by mass of the total mass of said first to fourth ingredients,

said main monomer is two or more monomers selected from methacrylic ester or acrylic ester, and

solubility in the water to said main monomer is 1% or less.

[5] A lubricant composition for hot forming according to claim 3 or 4, wherein the functioning group of said monomer having functioning group is selected from a group consisting of carboxyl group, epoxy group, amino group, and acetoacetyl group.

[6] A lubricant composition for hot forming according to any one of claims 3 to 5, wherein said co-polymeric surfactant is an anionic system co-polymeric surfactant.

[7] A lubricant composition for hot forming according to any one of claims 3 to 6, wherein ingredient of monomer, constituting said water-dispersible synthetic resin further comprising a fifth ingredient: polymeric monomer having alkoxysilyl group from 0.01 to 2% by mass.

[8] A lubricant composition for hot forming according to any one of claims 1 to 7, wherein the amine salt of said inorganic acid is a boric amine salt.

[9] A lubricant composition for hot forming according to any one of claims 1 to 8, in a water resistance test, peeling below 15% is shown at the temperature of 80°C, and in water washability test, peeling of 85% or more is shown at the temperature of 40°C.

[10] A method for producing seamless pipe or tube comprising the steps of: applying of the lubricant composition for hot forming as claimed in any one of claims 1 to 9 to a mandrel bar, and continuously rolling a pipe or tube by utilizing this mandrel bar.